ENVIRONMENT NEW BRUNSWICK
ENVIRONNEMENT NOUVEAU-BRUNSWICK

CASIER POSTAL / P.O. BOX 6000, FREDERICTON, N.B., CANADA E3B 5H1

SAINT JOHN AIR QUALITY DATA

1983 ANNUAL REPORT

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Compiled By:

AIR QUALITY SECTION
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ANNUAL REPORT

SAINT JOHN AIR QUALITY

1. INTRODUCTION

Environment New Brunswick owns and operates an air quality monitoring network in Saint John which includes a number of sampling locations linked by electronic telemetry.

A plume dispersion study entitled "The East Saint John, NB Dispersion Study, 22 July to 5 August 1981" by R. M. Hoff recommended additional monitoring for sulphur oxides in the Silver Falls Valley. As a result, a new station was instrumented with a Monitor Labs Sulphur Dioxide Monitor and connected to telemetry in February of 1983.

A number of instruments were replaced during 1983 due to poor service records. The Phillips H_2S monitor at DeMonts Street was was replaced with a Monitor Labs instrument in March. The Phillips SO_2 monitor at the Post Office was replaced with a Monitor Labs SO_2 instrument in August.

Some instrumentation was shuffled between stations during the year to obtain more effective utilization of our equipment. The H_2S instrument at DeMonts Street was moved to Millidgeville from May to October to evaluate more effectively the new Recovery Boiler Cross-Flow Scrubber at Irving Pulp and Paper. An Ozone instrument was operated in Hampton from July to October to help clarify whether ozone episodes were local or a result of long range transport and to estimate the local contribution to the outlying areas.

PRESENTATION OF DATA

2.1 GENERAL

The following tables consist of frequency distributions, of hourly average readings, monthly and annual means and the number of monthly and annual observations.

The number of exceedances of hourly provincial standards (or federal acceptable guideline limit in the case of ozone) and the annual average concentrations are presented in Summary Tables for each station at the beginning of each of the following subsections of this Chapter.

The number of hourly samples taken should be noted before drawing any conclusions regarding monthly or annual averages. These averages are calculated based on the samples taken with no minimum number specified.

2.2 CHAMPLAIN HEIGHTS

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Sulphur Dioxide	0.8 pphm	5

SULPHUR DIOXIDE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	375	97	1	0	0	473	1.4
FEB	594	37	8	0	0	639	0.7
MAR	698	14	1	0	0	13	0.2
APR	652	13	0	0	0	665	0.2
MAY	662	26	1	0	0	689	0.4
JUNE	607	79	3	1	0	690	1.0
JULY	654	58	0	0	0	712	0.7
AUG	650	46	1	0	0	687	0.7
SEPT	602	37	2	1	0	642	0.6
OCT	621	41	11	17	0	690	1.5
NOV	569	51	12	8	1	641	1.2
DEC	651	48	6	4	4	713	1.2
ANNUAL	**7335**	**547**	**46**	**31**	**5**	**7964**	**0.8**

2.3 DEMONTS STREET

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Hydrogen Sulphide	0.3 pphm	95
Sulphur Dioxide	0.4 pphm	0

HYDROGEN SULPHIDE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0	1	2-5	6-10	11+	NO. OF SAMPLES	MONTHLY AVERAGE
MAR	328	15	14	12	10	379	0.9
APR	583	11	13	10	4	621	0.3
MAY	500	55	5	3	1	564	0.2
NOV	655	39	7	1	0	702	0.1
DEC	652	74	15	0	0	741	0.1
ANNUAL	**2718**	**194**	**54**	**26**	**15**	**3007**	**0.3**

DEMONTS STREET

SULPHUR DIOXIDE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	305	7	0	0	0	312	0.6
FEB	622	17	0	0	0	639	0.4
MAR	541	32	1	1	0	575	0.6
JULY	288	0	0	0	0	288	0.1
AUG	625	9	0	0	0	634	0.2
SEPT	615	9	0	0	0	624	0.2
OCT	538	26	2	1	0	567	0.6
NOV	564	34	0	0	0	598	0.4
DEC	279	13	0	0	0	292	0.7
ANNUAL	**5002**	**147**	**3**	**2**	**0**	**5154**	**0.4**

2.4 HAMPTON

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Ozone	2.6 pphm	5

OZONE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-1	2-5	6-8	9-12	13+	NO. OF SAMPLES	MONTHLY AVERAGE
JULY	156	404	47	5	0	612	2.8
AUG	42	133	3	0	0	178	2.3
SEPT	124	286	29	0	0	439	2.5
ANNUAL	322	823	79	5	0	1229	2.6

2.5 FOREST HILLS

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Carbon Monoxide	1.0 ppm	0
Nitrogen Dioxide	2.6 pphm	0
Ozone	2.2 pphm	4
Sulphur Dioxide	1.3 pphm	1
Total Suspended Lead	0.45 ug/m^3*	N/A
Total Suspended Particulate	45.6 ug/m^3*	0
Total Suspended Sulphate	4.26 ug/m^3*	N/A

* Annual Average expressed as a geometric mean

FOREST HILLS

CARBON MONOXIDE
(PPM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-1	2-6	7-12	13-35	36+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	472	51	0	0	0	523	0.8
FEB	634	33	0	0	0	667	0.7
MAR	737	6	0	0	0	743	0.8
APR	669	48	0	0	0	717	0.9
MAY	711	26	0	0	0	737	0.7
JUNE	520	198	0	0	0	718	
JULY	705	38	0	0	0	743	0.9
AUG	549	130	0	0	0	679	1.1
SEPT	514	205	0	0	0	719	1.3
OCT	569	122	0	0	0	691	1.2
NOV	604	33	0	0	0	637	0.8
DEC	603	139	0	0	0	742	1.1
ANNUAL	**7287**	**1029**	**0**	**0**	**0**	**8316**	**1.0**

FOREST HILLS

NITROGEN DIOXIDE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-2	3-5	6-10	11-21	22+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	177	66	5	0	0	248	1.8
FEB	507	99	46	3	0	655	1.7
MAR	533	172	17	2	0	744	1.6
APR	96	482	134	7	0	719	4.1
MAY	83	540	133	1	0	737	4.0
JUNE	7	562	139	2	0	710	4.5
JULY	2	675	66	0	0	743	4.1
AUG	17	622	40	0	0	679	3.7
SEPT	255	14	0	0	0	269	.9
OCT	232	20	5	0	0	257	.8
NOV	680	30	1	0	0	711	0.4
DEC	718	22	2	0	0	742	0.3
ANNUAL	**3307**	**3304**	**588**	**15**	**0**	**7214**	**2.6**

FOREST HILLS

OZONE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-1	2-5	6-8	9-12	13+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	96	181	0	0	0	277	1.8
FEB	124	508	0	1	0	633	1.8
MAR	137	607	0	0	0	744	2.1
APR	129	590	0	0	0	719	2.3
MAY	221	516	0	0	0	737	1.9
JUNE	345	371	2	0	0	718	1.6
JULY	330	407	6	0	0	743	1.8
AUG	282	153	17	3	0	455	1.5
SEPT	30	0	0	0	0	30	0.4
OCT	312	408	0	0	0	720	2.2
NOV	84	622	4	0	0	710	3.5
DEC	127	597	17	0	0	741	3.3
ANNUAL	**2217**	**4960**	**46**	**4**	**0**	**7227**	**2.2**

FOREST HILLS

SULPHUR DIOXIDE
(PPHM)

MONTH	----FREQUENCY DISTRIBUTION ---- 0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	432	52	1	0	0	485	.9
FEB	575	63	1	0	0	639	.9
MAR	672	40	1	0	0	713	.7
APR	578	96	10	2	0	686	1.5
MAY	531	149	21	3	0	704	1.9
JUNE	394	253	33	9	1	690	3.3
JULY	418	230	50	14	0	712	3.6
AUG	282	65	4	5	0	356	1.6
SEPT	638	46	0	0	0	684	.6
OCT	680	10	0	0	0	690	0.4
NOV	627	8	2	0	0	637	0.4
DEC	740	2	0	0	0	742	0.1
ANNUAL	**6567**	**1014**	**123**	**33**	**1**	**7738**	**1.3**

2.6 MILLIDGEVILLE

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Hydrogen Sulphide	0.1 pphm	77
Sulphur Dioxide	0.5 pphm	0
Total Suspended Lead	0.11 ug/m³*	N/A
Total Suspended Particulate	38.8 ug/m³*	1
Total Suspended Sulphate	3.20 ug/m³*	N/A

* Annual Average expressed as a geometric mean

HYDROGEN SULPHIDE
(PPHM)

MONTH	----FREQUENCY DISTRIBUTION ---- 0	1	2-5	6-10	11+	NO. OF SAMPLES	MONTHLY AVERAGE
MAY	109	10	0	0	0	119	0.1
JUNE	620	72	26	1	0	719	0.2
JULY	692	41	6	3	0	742	0.1
AUG	644	61	21	3	0	729	0.2
SEPT	625	47	14	1	0	687	0.1
OCT	634	86	1	1	0	722	0.1
ANNUAL	**3324**	**317**	**68**	**9**	**0**	**3718**	**0.1**

MILLIDGEVILLE

SULPHIDE DIOXIDE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	120	0	0	0	0	120	0.2
FEB	636	3	0	0	0	639	0.3
MAR	703	10	0	0	0	713	0.2
APR	675	13	0	0	0	688	0.2
MAY	679	12	0	0	0	691	0.3
JUNE	608	81	1	0	0	690	1.0
JULY	652	60	0	0	0	712	0.9
AUG	487	56	0	0	0	543	0.9
SEPT	658	2	0	0	0	690	0.5
OCT	677	13	0	0	0	690	0.8
NOV	556	7	0	0	0	563	0.3
DEC	713	0	0	0	0	713	0.1
ANNUAL	**7164**	**287**	**1**	**0**	**0**	**7452**	**0.5**

2.7 POST OFFICE

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Carbon Monoxide	1.4 ppm	0
Nitrogen Dioxide	1.2 pphm	0
Ozone	2.3 pphm	N/A
Sulphur Dioxide	0.6 pphm	0
Total Suspended Lead	.11 ug/m^3*	N/A
Total Suspended Particulate	39.7 ug/m^3*	1
Total Suspended Sulphate	4.11 ug/m^3*	N/A

* Annual Average expressed as a geometric mean

NITROGEN DIOXIDE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-2	3-5	6-10	11-21	22+	NO. OF SAMPLES	MONTHLY AVERAGE
SEPT	461	190	55	6	0	712	2.2
OCT	678	43	0	0	0	721	.9
NOV	689	28	1	0	0	718	.8
DEC	723	20	0	0	0	743	.6
ANNUAL	**2551**	**281**	**56**	**6**	**0**	**2894**	**1.2**

POST OFFICE

CARBON MONOXIDE
(PPM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-1	2-6	7-12	13-35	36+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	353	157	3	0	0	513	1.3
FEB	361	294	9	1	0	665	1.8
MAR	462	273	9	0	0	744	1.7
APR	509	203	5	0	0	717	1.5
MAY	424	210	4	0	0	638	1.5
JUNE	566	154	0	0	0	720	1.2
JULY	654	89	0	0	0	743	0.7
AUG	568	153	1	0	0	722	1.1
SEPT	533	179	3	0	0	715	1.4
OCT	543	173	5	0	0	721	1.3
NOV	554	159	5	0	0	718	1.4
DEC	404	327	11	1	0	743	1.8
ANNUAL	**5931**	**2371**	**55**	**2**	**0**	**8359**	**1.4**

POST OFFICE

OZONE
(PPHM)

MONTH	FREQUENCY DISTRIBUTION 0-1	2-5	6-8	09-12	13+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	266	443	4	1	0	714	2.0
FEB	87	576	1	0	0	644	2.9
MAR	78	656	10	0	0	744	3.1
APR	67	452	32	0	0	551	3.1
MAY	38	125	30	0	0	193	3.4
SEPT	94	136	2	0	0	232	2.0
OCT	283	430	8	0	0	721	1.8
NOV	370	348	0	0	0	718	1.5
DEC	331	412	0	0	0	743	1.6
ANNUAL	**1614**	**3578**	**87**	**1**	**0**	**5280**	**2.3**

POST OFFICE

SULPHUR DIOXIDE
(PPHM)

MONTH	FREQUENCY DISTRIBUTION 0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	300	10	0	0	0	310	0.7
FEB	572	51	0	0	0	623	1.1
MAR	691	22	0	0	0	713	0.4
APR	653	14	0	0	0	667	0.4
MAY	684	14	0	0	0	698	0.3
JUNE	681	9	0	0	0	690	0.4
JULY	706	5	0	0	0	711	0.4
AUG	708	2	0	0	0	710	0.1
SEPT	702	12	0	0	0	714	0.4
OCT	705	15	0	0	0	720	0.3
NOV	667	51	0	0	0	718	0.8
DEC	540	202	1	0	0	743	1.7
ANNUAL	**7610**	**407**	**1**	**0**	**0**	**8017**	**0.6**

2.8 **RED HEAD**

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Sulphur Dioxide	0.3 pphm	0
Total Suspended Lead	.03 ug/m³*	N/A
Total Suspended Particulate	23.8 ug/m³*	0
Total Suspended Sulphate	3.54 ug/m³*	N/A

* Annual Average expressed as a geometric mean

SULPHUR DIOXIDE
(PPHM)

	---- FREQUENCY DISTRIBUTION ----						
MONTH	0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	207	29	1	0	0	237	0.9
FEB	488	70	4	8	0	570	1.4
MAR	672	41	0	0	0	713	0.4
APR	687	1	0	0	0	688	0.1
MAY	683	6	0	0	0	689	0.1
JUNE	578	48	2	1	0	629	0.6
JULY	558	4	0	0	0	562	0.1
AUG	662	5	0	0	0	667	0.1
SEPT	690	0	0	0	0	690	0.0
OCT	689	1	0	0	0	690	0.0
NOV	675	0	0	0	0	675	0.0
DEC	317	7	0	0	0	324	0.4
ANNUAL	**6906**	**212**	**7**	**9**	**0**	**7134**	**0.3**

2.9 SILVER FALLS

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Sulphur Dioxide	0.7 pphm	1

SULPHUR DIOXIDE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
FEB	13	0	0	0	0	13	1.2
MAR	692	19	1	0	0	712	0.3
APR	588	50	1	0	0	639	0.7
MAY	649	66	6	0	0	721	0.9
JUNE	577	129	10	4	0	720	1.8
JULY	611	124	5	1	1	742	1.5
AUG	604	98	2	1	0	705	1.1
SEPT	710	9	0	0	0	719	0.2
OCT	707	14	0	0	0	721	0.3
NOV	718	1	0	0	0	719	0.1
DEC	739	5	0	0	0	744	0.3
ANNUAL	**6608**	**515**	**25**	**6**	**1**	**7155**	**0.7**

2.10 WESTERN DISTRICT POLICE STATION

Summary

Parameter	Annual Average	Number of 1 Hour Exceedances
Ozone	2.4 pphm	1
Sulphur Dioxide	0.4 pphm	0
Total Suspended Lead	.08 ug/m³*	N/A
Total Suspended Particulate	26.5 ug/m³*	0
Total Suspended Sulphate	2.18 ug/m³*	N/A

* Annual Average expressed as a geometric mean

OZONE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-1	2-5	6-8	9-12	13+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	40	233	0	0	0	273	2.2
MAR	3	197	0	0	0	200	3.2
APR	60	518	1	0	0	579	2.8
MAY	140	598	0	0	0	738	2.2
JUNE	140	204	0	0	0	344	1.9
ANNUAL	**383**	**1750**	**1**	**0**	**0**	**2134**	**2.4**

WESTERN DISTRICT POLICE STATION

SULPHUR DIOXIDE
(PPHM)

MONTH	---- FREQUENCY DISTRIBUTION ---- 0-2	3-11	12-17	18-34	35+	NO. OF SAMPLES	MONTHLY AVERAGE
JAN	143	0	0	0	0	143	0.2
FEB	613	1	0	0	0	614	0.5
MAR	699	14	0	0	0	713	0.5
APR	682	5	1	0	0	688	0.6
MAY	690	1	0	0	0	691	0.2
JUNE	686	4	0	0	0	690	0.3
JULY	710	2	0	0	0	712	0.2
AUG	685	11	1	0	0	697	0.5
SEPT	684	6	0	0	0	690	0.4
OCT	685	4	1	0	0	690	0.4
NOV	668	3	0	0	0	671	0.4
DEC	618	3	0	0	0	621	0.3
ANNUAL	**7563**	**54**	**3**	**0**	**0**	**7620**	**0.4**

3. CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

3.1 SULPHUR DIOXIDE
ug/m³

YEAR	Police Station	Mill'g -ville	Post Office	Red Head	Forest Hills	Champl'n Heights	DeMonts Street	Silver Falls
1975	2.1	20.8	34.1	16.7	-	-	-	-
1976	3.8	20.2	38.8	15.7	27.5	-	-	-
1977	4.4	20.6	42.7	21.4	48.6	27.6	56.0	-
1978	9.2	13.4	19.0	17.7	40.1	35.7	35.4	-
1979	7.7	17.4	48.4	13.3	38.7	34.2	33.1	-
1980	19.3	16.9	34.0	8.0	54.0	42.0	25.4	-
1981	15.9	15.0	39.2	13.2	44.4	48.5	-	-
1982	13.3	16.5	17.4	16.4	47.7	27.4	12.2	-
1983	10.6	13.3	15.9	8.0	34.5	21.2	10.6	18.6

NOTE: The Provincial Annual Average Standard for Sulphur Dioxide is 60 ug/m³.

CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

3.2 TOTAL SUSPENDED PARTICULATES/SULPHATE
mg/m^3

YEAR	W.D. Police Station		Mill'g -ville		Red Head		Provincial Building		Forest Hills	
	TSP	SO_4	TSP	SO_4	TSP	SO_4	TSP	SO_4	TSP	SO_4
1975	36.7	-	52.6	-	31.2	-	51.7	-	-	-
1976	36.8	-	55.8	-	28.1	-	49.4	-	51.0	-
1977	32.8	-	44.3	-	27.9	-	63.0	-	43.6	-
1978	38.2	2.30	54.9	-	30.6	4.1	56.8	5.7	53.2	-
1979	36.9	1.30	50.1	-	28.6	2.1	58.3	4.1	38.1	-
1980	38.0	2.30	54.8	-	35.8	2.9	68.8	6.2	43.3	-
1981	30.5	1.66	38.5	-	32.7	2.52	57.2	3.89	38.5	-
1982	33.6	2.39	41.3	-	29.9	2.74	58.7	4.95	43.3	-
1983	26.5	2.18	38.8	3.20	23.8	3.54	39.7	4.11	45.6	4.26

NOTE: The Provincial Annual Average Standard for Total Suspended Particulate is 70 ug/m^3. No standard has yet been adopted for Sulphate.

CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

3.3	Carbon Monoxide (ug/m^3)		Hydrogen Sulphide (ug/m^3)		Nitrogen Dioxide (ug/m^3)	
YEAR	Post Office	Forest Hills	DeMonts Street	Mill'g -ville	Post Office	Forest Hills
1975	-	-	-	-	-	-
1976	-	-	-	-	-	-
1977	-	1510	-	-	-	19.6
1978	-	720	6.6	-	-	13.5
1979	-	650	4.8	-	-	16.9
1980	811	746	9.1	-	5.7	13.5
1981	397	464	0.6	-	31.0	-
1982	695	495	2.3	-	28.5	38.6
1983	680	1200	4.2	1.4	22.8	49.4

NOTE: Provincial Annual Average Standards have not been adopted for Carbon Monoxide or Hydrogen Sulphide. The Standard for Nitrogen Dioxide is 100 ug/m^3.

RECORD OF ANNUAL CONCENTRATIONS

3.4	Ozone (ug/m^3)			Dustfall (gm/m^3)			
YEAR	Post Office	Forest Hills	Police Station	Brookville Road	Brookville Hill	Brookville Bishops	Provincial Hospital
1975	-	-	-	-	-	-	8.1
1976	-	-	-	10.3	11.8	24.6	9.2
1977	-	76.3	-	4.5	8.2	11.2	9.1
1978	-	63.1	-	11.0	9.0	16.1	13.0
1979	-	-	-	5.2	8.9	13.9	8.2
1980	4.7	52.5	46.5	5.1	17.4	21.3	11.6
1981	35.2	45.2	-	7.1	13.9	15.3	14.1
1982	44.5	43.3	-	5.6	5.0	-	7.3
1983	46.0	44.0	48.0	-	-	-	-

CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

3.5 Sulphation Rate

($mgSO_3/100cm^2/day$)

YEAR	Provincial Hospital	Musquash Road	Provincial Building	Red Head	Ludgate Lake	Rockwood Park
1974	1.89	-	-	0.62	-	-
1975	2.46	-	-	1.22	-	-
1976	1.62	0.31	1.09	0.42	0.25	0.51
1977	1.45	0.26	1.43	0.45	0.26	0.50
1978	1.83	0.41	1.04	0.46	0.52	0.55
1979	3.91	0.37	1.39	0.79	0.45	0.59
1980	1.44	0.13	0.79	0.36	0.20	0.47
1981	1.48	0.22	0.90	0.36	0.24	0.51
1982	-	0.21	1.02	0.35	0.24	0.52
1983	1.36	-	0.75	0.33	-	-

YEAR	Bloomsb. Mountain	Shadow Lake	Canaport	Forest Hills	DeMonts Street	Mill'g-ville
1974	-	-	-	-	-	-
1975	-	-	-	-	-	-
1976	0.31	0.15	-	-	-	0.62
1977	0.25	0.30	-	0.75	0.65	0.42
1978	0.46	0.16	-	1.21	0.81	0.78
1979	0.43	0.50	0.49	0.74	1.02	0.53
1980	0.17	0.20	0.27	0.55	0.49	0.43
1981	0.17	0.19	0.27	0.66	0.48	0.32
1982	0.25	0.29	0.32	0.74	0.55	0.39
1983	-	-	-	0.66	0.47	0.39

CUMULATIVE RECORD OF ANNUAL CONCENTRATIONS

TOTAL SUSPENDED LEAD

(ug.m^3; arithmetic means)

YEAR	Forest Hills	Red Head	Provincial Building	Mill'g -ville	Police Station	Fredericton Fire Station
1974	-	0.09	-	0.35	0.51	
1975	-	0.17	0.59	0.46	0.52	0.89
1976	0.34	0.09	0.39	0.32	0.28	0.67
1977	0.23	0.05	0.28	0.19	0.16	0.55
1978	0.25	0.06	0.26	0.24	0.14	0.41
1979	0.26	0.04	0.24	0.25	0.14	0.46
1980	0.30	0.04	0.25	0.35	0.14	0.43
1981	0.25	0.06	0.23	0.24	0.14	0.38
1982	0.21	0.06	0.20	0.23	0.14	0.34
1983	0.18	0.04	0.13	0.11	0.11	0.28

4. Discussion of Results

At the eight monitoring locations measuring sulphur dioxide, the number of exceedances (7) of the Provincial One-Hour Standard was a decrease from 18 in 1982. The annual average was below the Provincial Standard and levels at all sites showed a decrease from the previous year. The highest annual average continues to be recorded at Forest Hills. The decrease in the annual average of sulphur dioxide can be at least partially attributed to significantly less power generation at the Coleson Cove and Courtenay Bay Thermal Generating Stations and lower production at the Irving Refinery.

There were no exceedances of the one hour Provincial Standard at either of the two carbon monoxide monitoring stations. There was a slight decrease in the annual average at the Post Office while Forest Hills levels appear to have increased significantly, which may, however, have been due to baseline drift problems.

There were no exceedances of the one hour Provincial Standard at either of the two stations monitoring nitrogen dioxide. The annual average decreased at the Post Office location while it increased at the Forest Hills location.

Annual average ozone levels increased at both locations this year, with the Post Office location measuring a slightly higher annual average than Forest Hills. The major contribution is from long range transport.

The annual average for hydrogen sulphide increased

almost two-fold at the DeMonts Street location. There were ninety-five exceedances of the one hour Provincial Standard at DeMonts Street and seventy-seven at Millidgeville. The H_2S monitor was replaced at DeMonts Street in March. It was moved to Millidgeville for the summer months and returned to DeMonts Street in November. More accurate measurement probably accounted for the apparent increases. Annual averages are below those measured prior to 1981 showing the effect of the I.P.P. scrubber.

Annual averages for T.S.P. at all locations were below the Provincial Standard. Forest Hills had the highest annual average. The Provincial Building and Millidgeville locations recorded one exceedance each of the twenty-four hour Provincial Standard. The significant decrease in T.S.P. at the Provincial Building may be attributed to the decrease in operation of the boiler at a nearby hotel.

There are five monitoring locations which measured SO_4 and lead in conjunction with T.S.P. The highest annual average for both were recorded at Forest Hills. The Fredericton lead levels are shown for comparison.

There are six locations at which Sulphation Rate (S.R.) was measured. Sulphation plate monitoring began in 1974 was discontinued at the end of 1983.

These results indicate general improvement in air quality in the Saint John Region. Any problems were short term in nature except for ozone which is imported from the United States under conditions of warm southwesterly flows. The long

term air quality objectives as set out by the Federal Guidelines and Provincial Regulations are being met consistently.

APPENDIX A

A.1 REGULATIONS AND GUIDELINES

GROUND LEVEL AIR QUALITY

NEW BRUNSWICK REGULATION

Contaminant	1 HR	8 HR	24 HR	Annual
Carbon Monoxide	35,000	15,000	-	-
Hydrogen Sulphide	15	-	5	-
Nitrogen Dioxide	400	-	200	100
Sulphur Dioxide	900	-	300	60
Total Suspended Particulate	-	-	120	70

FEDERAL ACCEPTABLE GUIDELINE

Contaminant	1 HR	24 HR	Annual
Ozone	160	50	30

REGULATIONS/GUIDELINES FROM OTHER PROVINCES

Contaminant	24 HR	Monthly	Annual
Dustfall		7 gm/m^2	4.6 gm/m^2
Lead	5	2	

All values in micrograms per cubic meter unless otherwise noted.

A.2 ABBREVIATIONS

The following is a list of abbreviations and notations used in this report.

pphm - parts per hundred million

ppm - parts per million

ug/m^3 - micrograms per cubic meter

N/A - data not available

A. 3 CONVERSION TO METRIC UNITS

The units of measurement used in the monthly reports were converted to metric units for presentation of annual averages. The conversion factors used were:

SO_2	1 pphm = 26.5 ug/m^3
CO	1 ppm = 1200 ug/m^3
NO_2	1 pphm = 19 ug/m^3
O_3	1 pphm = 20 ug/m^3
H_2S	1 pphm = 14 ug/m^3
DUST	1 ton/$mile^2$/month = 350.5 mg/m^2/month

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